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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/581,921	03/14/2007	Henry Madsen	ALB.025	9273
20987 7590 02/25/2011 VOLENTINE & WHITT PLLC ONE FREEDOM SQUARE 11951 FREEDOM DRIVE SUITE 1260 RESTON, VA 20190			EXAMINER ROSATI, BRANDON MICHAEL	
			ART UNIT 3744	PAPER NUMBER
			NOTIFICATION DATE 02/25/2011	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/581,921

Applicant(s)

MADSEN ET AL.

Examiner

BRANDON M. ROSATI

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 November 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 17-32 is/are pending in the application.
- 4a) Of the above claim(s) 22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 17-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 6/7/2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>See Continuation Sheet</u> . | 6) <input type="checkbox"/> Other: _____ |

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :8/21/07, 8/26/08, 3/5/09, 5/20/09, 11/20/09.

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DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Species B in the reply filed on 11/19/2010 is acknowledged.
2. Claim 22 is withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected Species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 11/19/2010.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claims 26-28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 26, it is unclear what the "desired" pressure would be to one having ordinary skill in the art, thus rendering claim 26 indefinite.

Claims 27 and 28 are rejected as being dependent from a rejected claim.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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6. Claims 17-20 and 29-32 rejected under 35 U.S.C. 102(b) as being anticipated by Chu et al. (U.S. Patent No. 3,609,991).

Regarding claim 17, Chu et al. disclose in Figure 1, all the claimed limitations including a cooling system comprising a first heat receiving part (lower portion of (18) contacting (12)), receiving heat from a heat emitting element (i.e. board) (12), a cooling fluid (28), the system being sealed, a bubble pump (18) with a tube shaped part (26/30) moving fluid, and a radiator/condenser unit (i.e. reservoir) (24). (Column 3, lines 5-35). It is noted that the phrases "for cooling of at least one heat emitting element," "to receive heat from the at least one heat emitting element," "for absorption of heat by heating and evaporation," "for generation of a fluid flow in the system by motive forces of bubbles moving liquid cooling fluid at substantially the same velocity as the bubbles in tube-shaped part," "for emission of heat from the cooling fluid in liquid form to the surroundings," and "for condensing of evaporated cooling fluid and emission of the condensation" are statements of intended use and the structure of the device is capable of performing the function.

Regarding claim 18, Chu et al. disclose the bubble pump having an outlet (23) positioned above the liquid level of the system.

Regarding claim 19, Chu et al. disclose a second heat receiving part (see lower portion of (18)) (see one of three (18) in Figure 1).

Regarding claim 20, Chu et al. disclose a plurality of bubble pumps (18).

Regarding claim 29, Chu et al. disclose heat emitting elements integrated with the system (see Figure 1 regions near multiple (18)).

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Regarding claim 30, Chu et al. disclose the heat receiving part being a plurality of chambers (see region near (18)).

Regarding claim 31, Chu et al. disclose having multiple elements (regions near(12)) which are cooled. It is noted that the phrase "to be cooled during the operation of the electronic device" is a statement of intended use and the structure of the device is capable of performing the function.

Regarding claim 32, MPEP 2114 clearly states "While features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus **must be** distinguished from the prior art in terms of structure rather than function. Because claim 32 fails to further limit the apparatus in terms of structure, but rather only recite further functional limitations, the invention as taught by Chu et al. is deemed fully capable of performing such function.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

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invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. Claim 21 rejected under 35 U.S.C. 103(a) as being unpatentable over Chu et al. (U.S. Patent No. 3,609,991) in view of Sorensen (U.S. Patent No. 5,351,488).

Regarding claim 21, Chu et al. disclose all the claimed limitations except the bubble pumps being connected in series. However, Sorensen disclose the concept of having bubble pumps (1) connected in series (see Figure 1 and column 2, lines 59-65). Hence, it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to modify the teachings of Chu et al. with the pump connected in series of Sorensen because this would produce sufficient pressure to drive the fluid (Column 2, lines 59-65).

11. Claims 23-25 rejected under 35 U.S.C. 103(a) as being unpatentable over Chu et al. (U.S. Patent No. 3,609,991) in view of Budelman (U.S. Patent No. 5,394,936).

Regarding claim 23, Chu et al. disclose all the claimed limitations except the cooling fluid being two different fluids. However, Budelman discloses a heat removal system which utilizes two different fluids (Column 8, lines 1-35). Hence, it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to modify the teachings of

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Chu et al. with the two fluid coolant of Budelman because this would vary the boiling point of the system and thus vary the overall amount of heat transfer.

Regarding claim 24, the combined teachings of Chu et al. and Budelman disclose all the claimed limitations including the first fluid being methanol (see Budelman Column 8, lines 1-35).

Regarding claim 25, the combined teachings of Chu et al. and Budelman disclose all the claimed limitations including the second fluid being water (see Budelman Column 8, lines 1-35).

12. Claims 26-28 rejected under 35 U.S.C. 103(a) as being unpatentable over Chu et al. (U.S. Patent No. 3,609,991).

Regarding claim 26 Chu et al. disclose all the claimed limitations including the system having a pressure, but not explicitly disclose the system being adjusted to a desired pressure. It is noted that adjusting the pressure is a functional limitation and the structure of the device is capable of performing the function. Further, it would be obvious to one having ordinary skill in the art to adjust the pressure of the system depending on the desire parameters of the system and amount of heat transfer desired.

Regarding claim 27, Chu et al. disclose all the claimed limitations including the system having a pressure. It is noted that the phrase "adjusted so that the lowest boiling temperature of the fluids substantially equals the desired operating temperature of the at least one heat emitting element" is a statement of intended use and the structure of the device is capable of performing the function. Further, it would be obvious to one having ordinary skill in the art to adjust the pressure of the system depending on the desire parameters of the system and amount of heat transfer desired.

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Regarding claim 28 Chu et al. disclose all the claimed limitations including the system having a pressure, but not explicitly disclose the system being lower than atmospheric. However, it would be obvious to one having ordinary skill in the art to adjust the pressure of the system depending on the desire parameters of the system and amount of heat transfer desired.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Ippoushi et al. (U.S. Patent No. 7,380,584 B2) discusses a pump free water cooling system.

Ippoushi et al. (U.S. Patent No. 7,841,387 B2) discusses a pump free water cooling system.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRANDON M. ROSATI whose telephone number is (571)270-3536. The examiner can normally be reached on Monday-Friday 8:00am- 4:30pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler can be reached on (571) 272-4834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would

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like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

BMR

2/12/2011

/Cheryl J. Tyler/

Supervisory Patent Examiner, Art Unit
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